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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,057	06/28/2003	Hong-Da Liu	03167-UDL	6880

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EXAMINER

KIM, RICHARD H

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,057

Applicant(s)

LIU ET AL.

Examiner

Richard H Kim

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang et al. (US 6,522,375 B1) in view of Leenhouts et al. (US 5,877,831).

Referring to claims 1, 7 and 8, Jang et al. discloses a device comprising an active matrix device structure, the active matrix device structure having at least one region of different height level thereon (Fig. 12C); a diffusing layer being formed above the active matrix device structure (116), the diffusing layer having a polarity of extruded bumps of various film thickness and various heights and shapes thereon (116); and a structure of a reflective layer deposited on the diffusing layer (118). However, the reference does not disclose that the structure is multi-domain.

Leenhouts et al. discloses a multi-domain structure (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a multi-domain structure in order to reduce viewing angle dependence (col. 1, lines 23-25).

Referring to claims 5 and 6, Jang et al. discloses that the structure of a multi-domain reflective layer is the structure of a reflective layer of a thin film transistor (114).

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3. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang et al. and Leenhouts et al., in view of Kataoka et al. (US 6,266,111 B1).

Jang et al. discloses a device wherein the diffusing layer is a layer of photo-resist material. However, the reference does not disclose that the diffusing layer has an average film thickness between one-twentieth of a cell gap to one cell gap, and wherein the average height different of the at least one region of different height level is between zero to one-third of a cell gap.

Kataoka et al. discloses a diffusing layer having an average film thickness between one-twentieth of a cell gap to one cell gap, and wherein the average height different of the at least one region of different height level is between zero to one-third of a cell gap (Fig. 5, ref. 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the diffusing layer to have an average film thickness between one-twentieth of a cell gap to one cell gap, and wherein the average height different of the at least one region of different height level is between zero to one-third of a cell gap in order to efficiently diffuse the light over the cell gap and therefore provide "high diffusion efficiency and desired directivity" (col. 2, lines 9-12).

4. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang et al. and Leenhouts et al. and Shigeno (US 6,147,727).

Referring to claim 4, Jang et al. and Leenhouts et al. disclose the device previously recited. However, the reference does not disclose that the extruded bumps have average slope angles between zero to 10 degrees.

Shigeno discloses a device wherein the extruded bumps having average slope angles of 10 degrees (col. 7, lines 48-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the bumps to have average slope angles between zero to 10 degrees in order to form a fine display background and to also increase the viewing angle (col. 7, lines 33-35). Moreover, although Shigeno discloses that the angles is approximately 10 to 20 degrees, Applicant's disclosure that the slope angle is between zero and 10 degrees is a result dependent variable. By decreasing the angle the light will scatter at a greater oblique angle, increasing the scattering affect of the diffusing layer and ultimately further increasing the viewing angle.

Referring to claim 9, Jang et al. and Leenhouts et al. disclose the device previously recited. However, the references do not disclose the device being self-compensated twisted nematic, reflective twisted nematic, reflective electrical controlled birefringence or mixed mode twisted nematic thin film liquid crystal display.

Shigeno discloses a device being reflective electrical controlled birefringence (col. 5, lines 59-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the device to be reflective electrical controlled birefringence since one would be motivated to reduce reflectivity of the black display and also to increase contrast (col. 3, lines 39-41).

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H Kim whose telephone number is (703)305-4791. The examiner can normally be reached on 9:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703)305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Richard H Kim
Examiner
Art Unit 2871

RHK


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
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